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PATENT & TRADEMARK OFFICE
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FIG.1

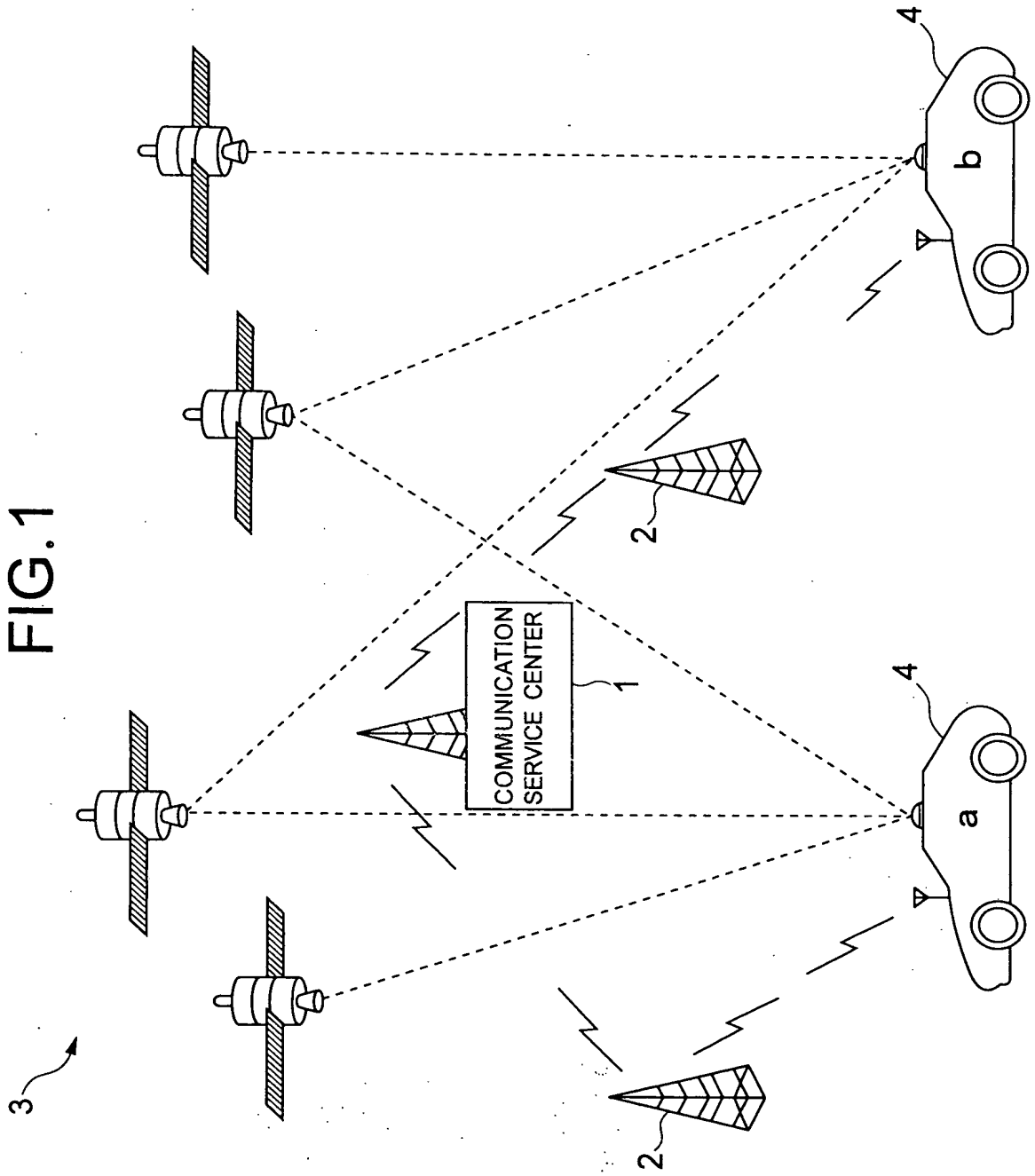


FIG.2

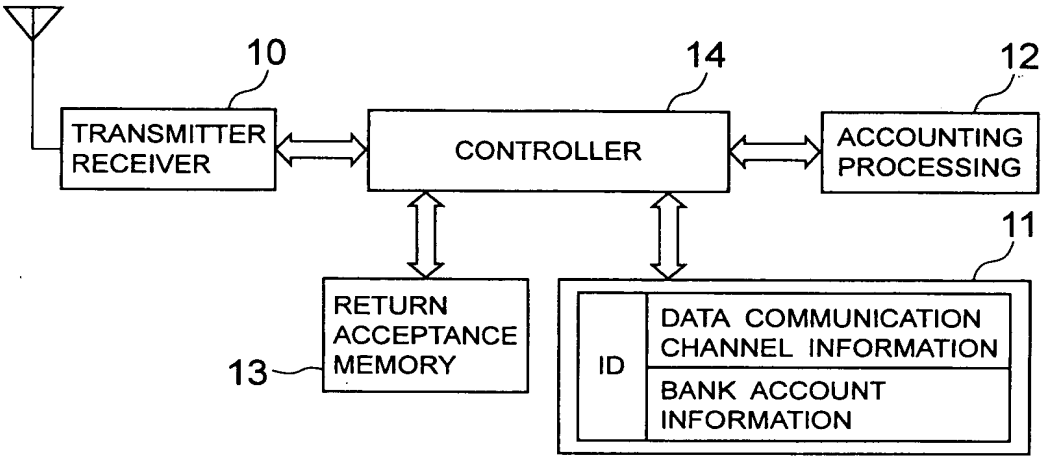

10
14
12
TRANSMITTER RECEIVER
CONTROLLER
ACCOUNTING PROCESSING
11
RETURN ACCEPTANCE MEMORY
13
ID
DATA COMMUNICATION CHANNEL INFORMATION
BANK ACCOUNT INFORMATION

FIG.3

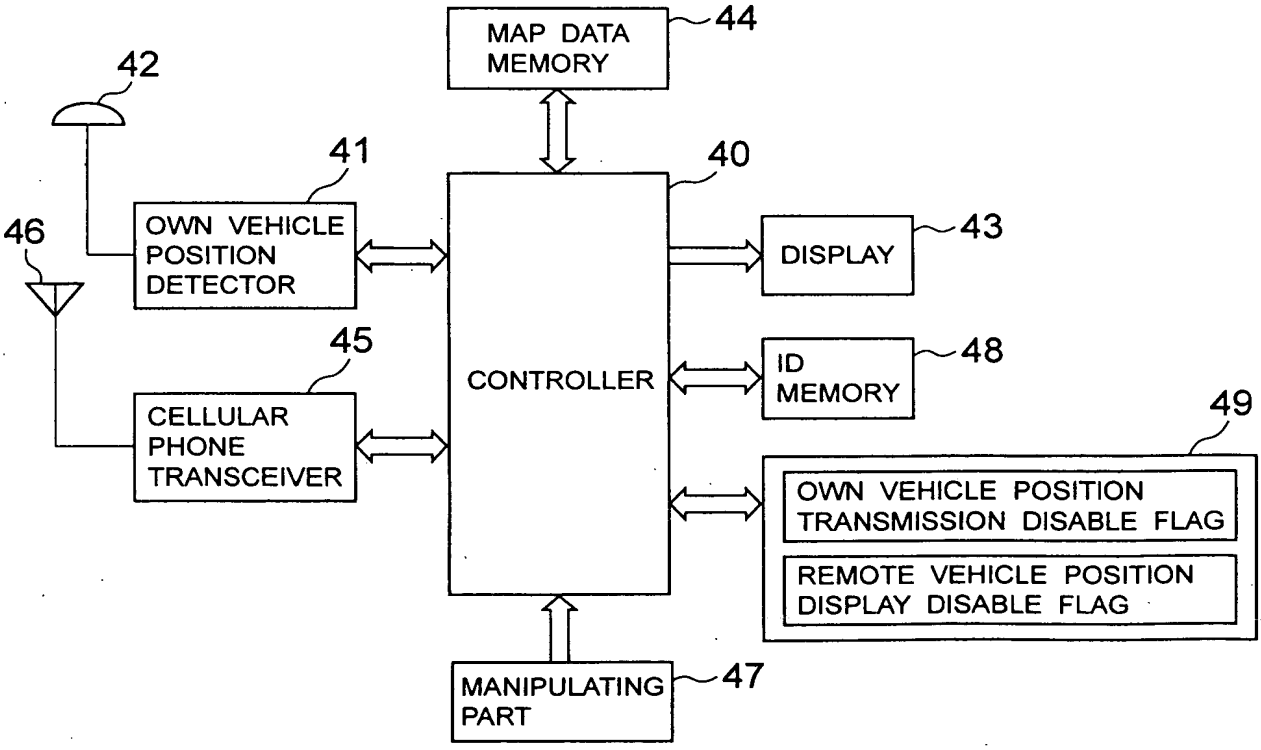

MAP DATA MEMORY
44
42
41
40
46
OWN VEHICLE POSITION DETECTOR
DISPLAY
43
45
CONTROLLER
ID MEMORY
48
49
CELLULAR PHONE TRANSCEIVER
OWN VEHICLE POSITION TRANSMISSION DISABLE FLAG
REMOTE VEHICLE POSITION DISPLAY DISABLE FLAG
MANIPULATING PART
47

FIG.4

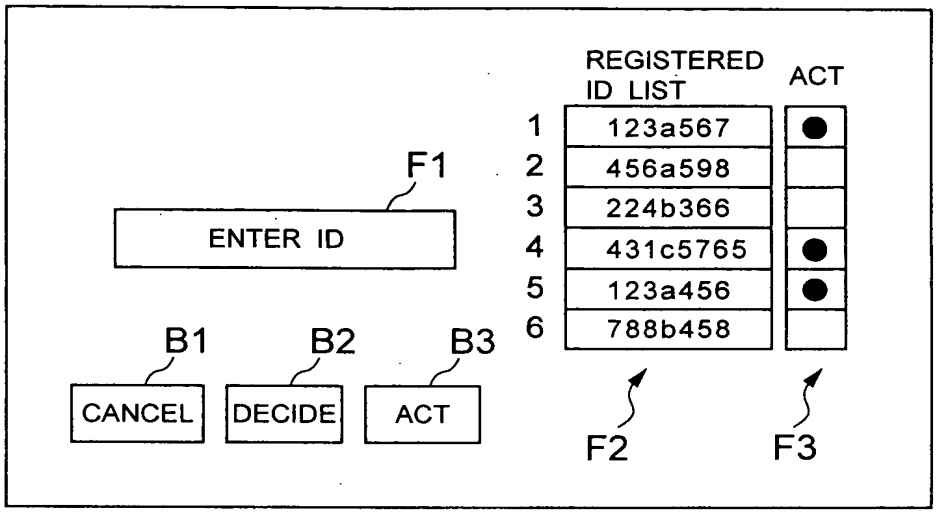

REGISTERED ID LIST
ACT
1 123a567
2 456a598
3 224b366
4 431c5765
5 123a456
6 788b458
F1
ENTER ID
B1
B2
B3
CANCEL
DECIDE
ACT
F2
F3

FIG.5

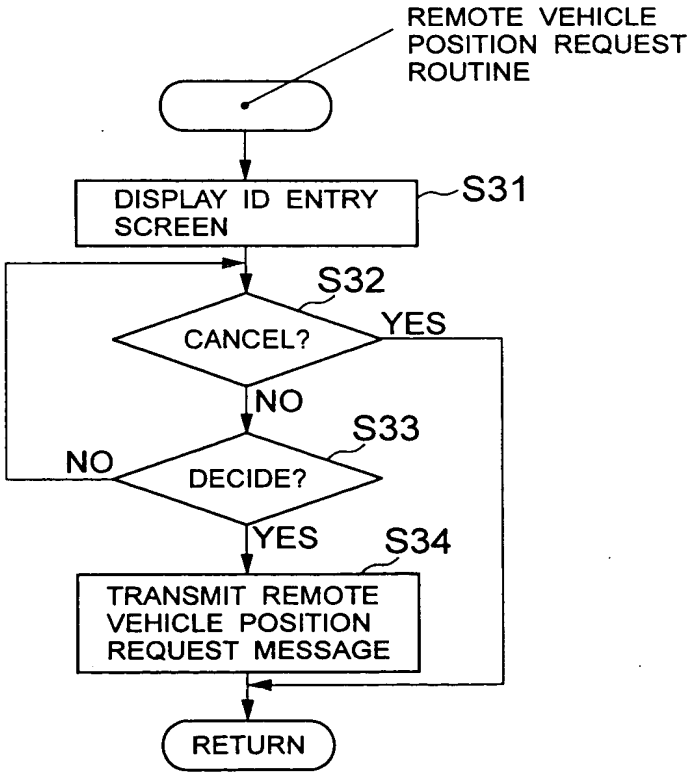

REMOTE VEHICLE POSITION REQUEST ROUTINE
DISPLAY ID ENTRY SCREEN
S31
S32
CANCEL?
YES
NO
S33
NO
DECIDE?
YES
S34
TRANSMIT REMOTE VEHICLE POSITION REQUEST MESSAGE
RETURN

FIG.6

REMOTE VEHICLE POSITION REQUEST MESSAGE

OPR	REQUESTING VEHICLE ID	REQUESTED VEHICLE ID

OPR : REMOTE VEHICLE POSITION REQUEST CODE

FIG.7

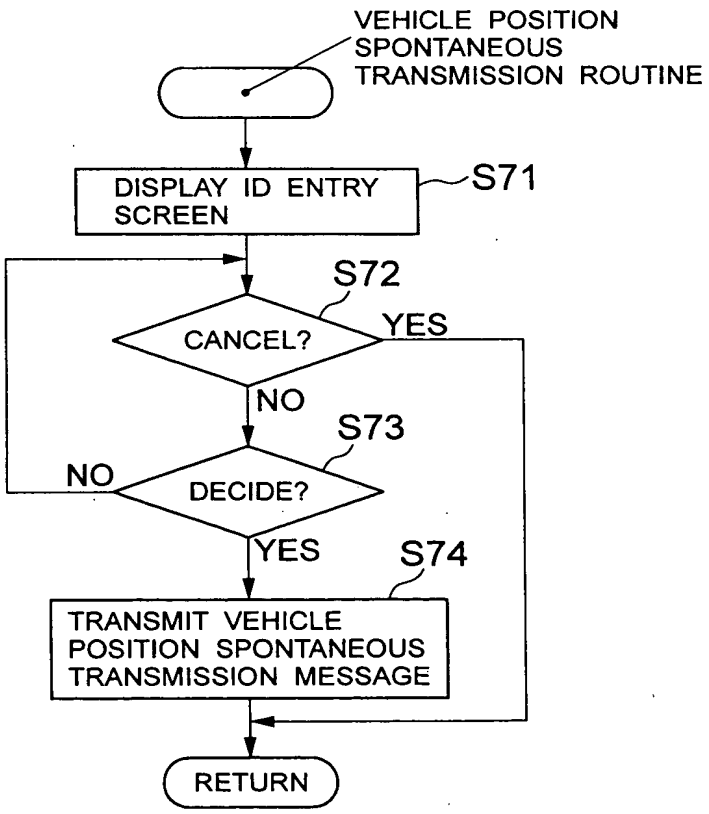


FIG.8

CPT : VEHICLE POSITION SPONTANEOUS TRANSMISSION CODE

FIG.9

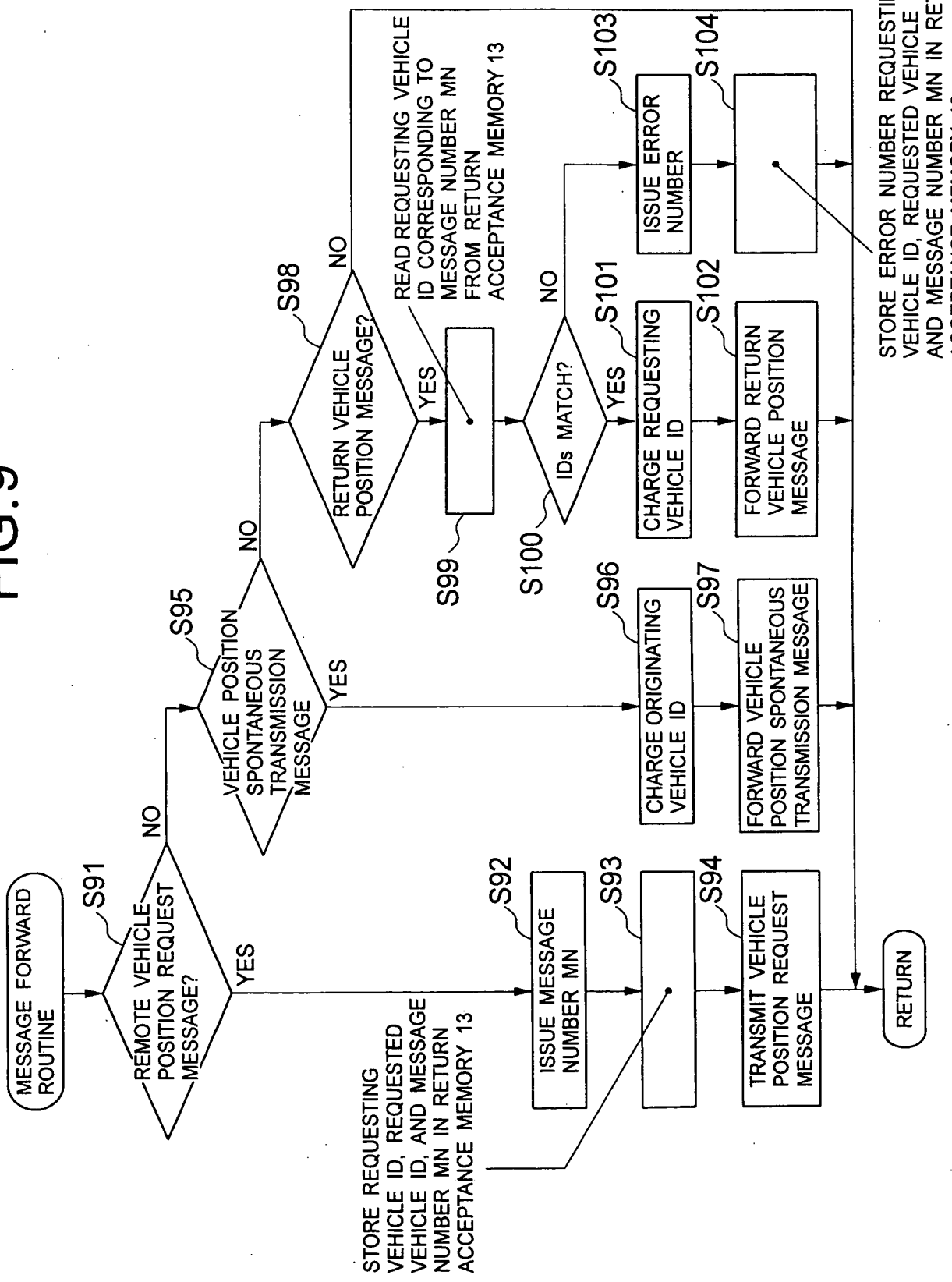

MESSAGE FORWARD ROUTINE
S91
REMOTE VEHICLE POSITION REQUEST MESSAGE?
YES
NO
S92
ISSUE MESSAGE NUMBER MN
S93
S94
TRANSMIT VEHICLE POSITION REQUEST MESSAGE
RETURN
STORE REQUESTING VEHICLE ID, REQUESTED VEHICLE ID, AND MESSAGE NUMBER MN IN RETURN ACCEPTANCE MEMORY 13
S95
VEHICLE POSITION SPONTANEOUS TRANSMISSION MESSAGE
YES
NO
S96
CHARGE ORIGINATING VEHICLE ID
S97
FORWARD VEHICLE POSITION SPONTANEOUS TRANSMISSION MESSAGE
S98
RETURN VEHICLE POSITION MESSAGE?
YES
NO
S99
READ REQUESTING VEHICLE ID CORRESPONDING TO MESSAGE NUMBER MN FROM RETURN ACCEPTANCE MEMORY 13
S100
IDs MATCH?
YES
NO
S101
CHARGE REQUESTING VEHICLE ID
S102
FORWARD RETURN VEHICLE POSITION MESSAGE
S103
ISSUE ERROR NUMBER
S104
STORE ERROR NUMBER REQUESTING VEHICLE ID, REQUESTED VEHICLE ID, AND MESSAGE NUMBER MN IN RETURN ACCEPTANCE MEMORY 13

FIG. 10

VEHICLE POSITION REQUEST MESSAGE

CPR	REQUESTING VEHICLE ID	REQUESTED VEHICLE ID	MESSAGE NUMBER

CPR : VEHICLE POSITION REQUEST CODE

FIG. 11

RETURN VEHICLE POSITION MESSAGE

RCP	REQUESTING VEHICLE ID	REQUESTED VEHICLE ID	MESSAGE NUMBER MN	VEHICLE POSITION INFORMATION

RCP : RETURN VEHICLE POSITION CODE

FIG.12

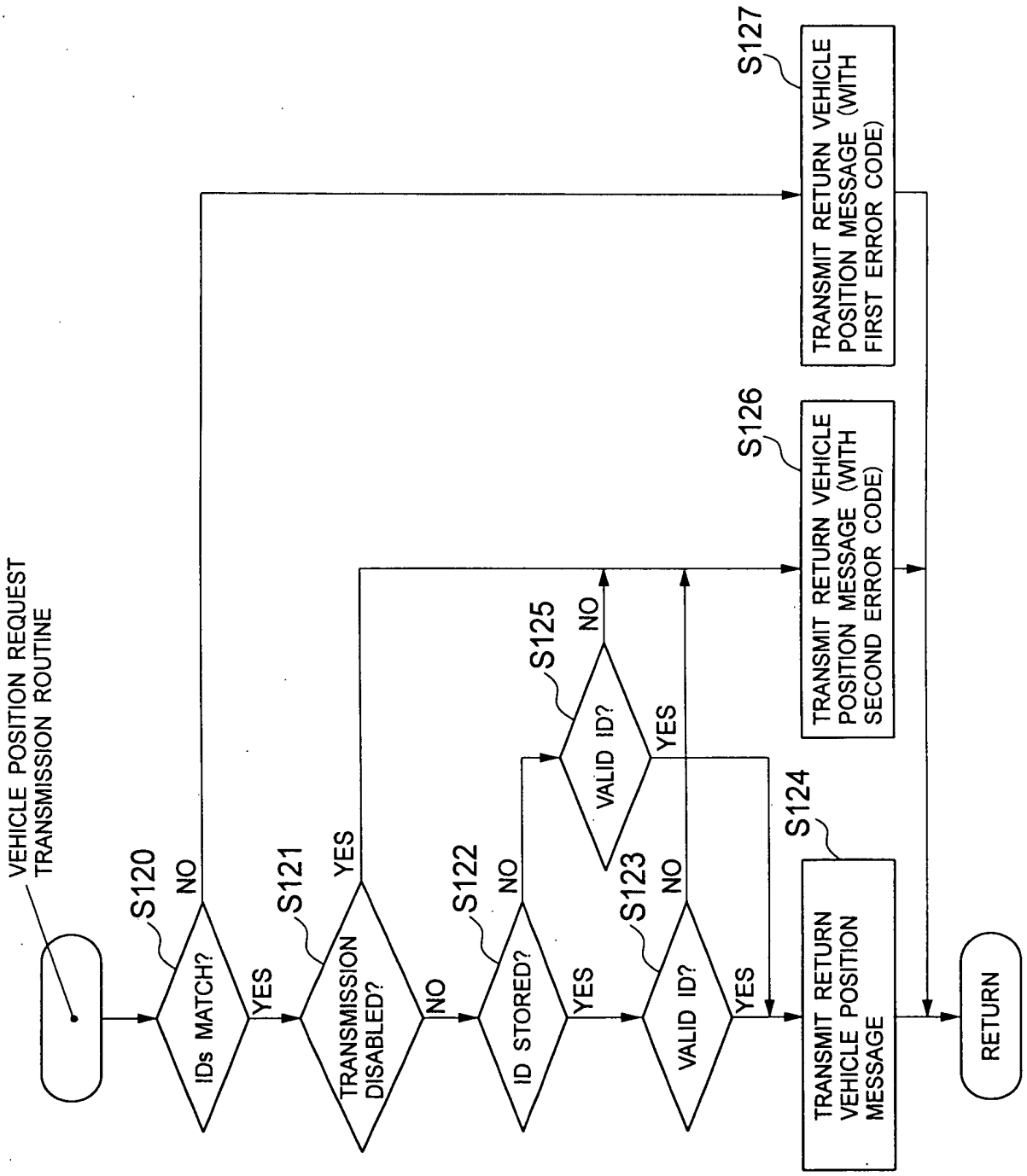

VEHICLE POSITION REQUEST TRANSMISSION ROUTINE
S120
IDs MATCH?
NO
YES
S121
TRANSMISSION DISABLED?
YES
NO
S122
ID STORED?
NO
YES
S123
VALID ID?
NO
YES
S124
TRANSMIT RETURN VEHICLE POSITION MESSAGE
S125
VALID ID?
NO
YES
S126
TRANSMIT RETURN VEHICLE POSITION MESSAGE (WITH SECOND ERROR CODE)
S127
TRANSMIT RETURN VEHICLE POSITION MESSAGE (WITH FIRST ERROR CODE)
RETURN

FIG. 13

RETURN VEHICLE POSITION MESSAGE	RCP	REQUESTING VEHICLE ID	REQUESTED VEHICLE ID	MESSAGE NUMBER MN	ERR1

RCP : RETURN VEHICLE POSITION CODE
ERR1 : FIRST ERROR CODE

FIG. 14

RETURN VEHICLE POSITION MESSAGE	RCP	REQUESTING VEHICLE ID	REQUESTED VEHICLE ID	MESSAGE NUMBER MN	ERR2

RCP : RETURN VEHICLE POSITION CODE
ERR2 : SECOND ERROR CODE

FIG. 15

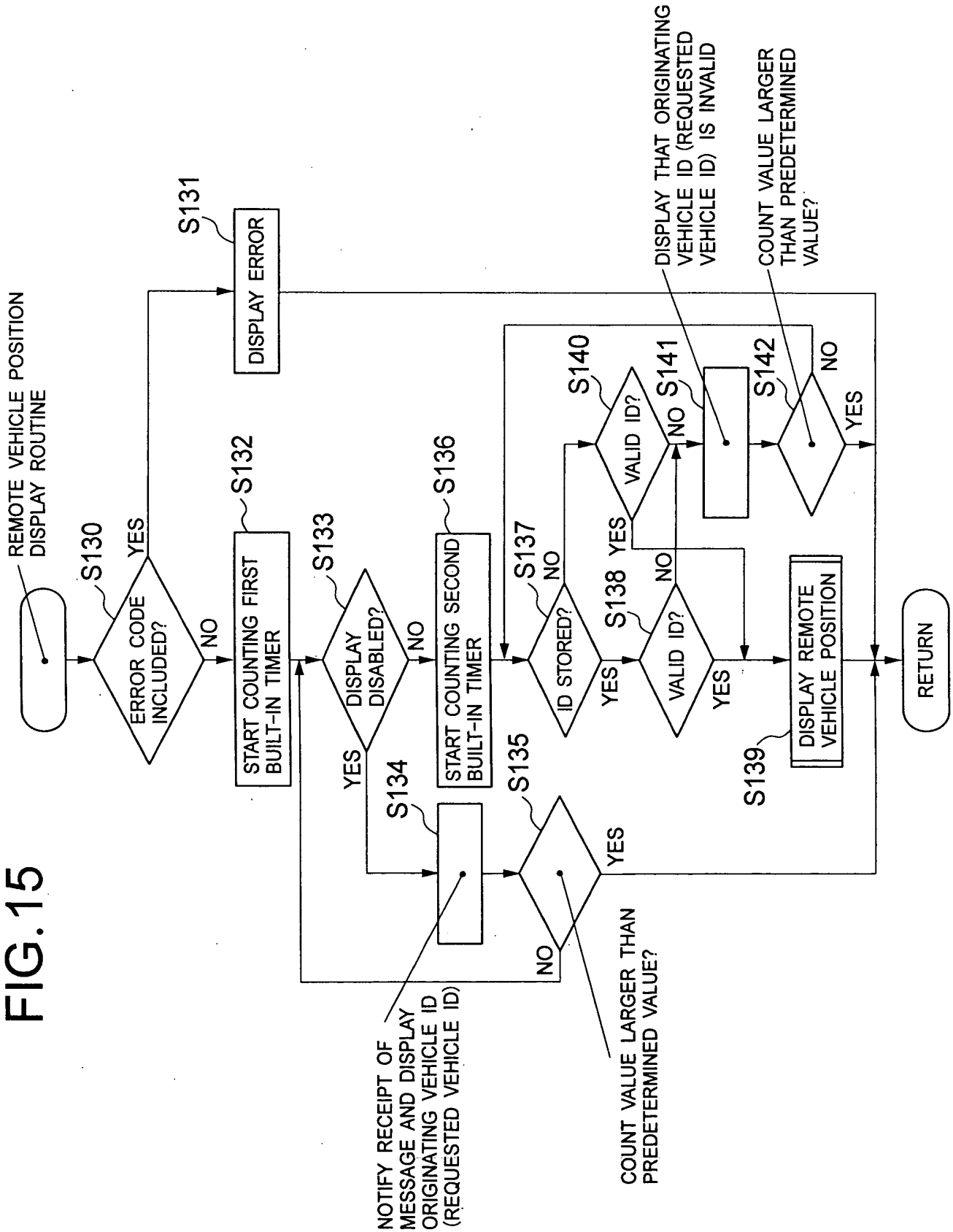

REMOTE VEHICLE POSITION DISPLAY ROUTINE
S130
ERROR CODE INCLUDED?
YES
NO
S131
DISPLAY ERROR
S132
START COUNTING FIRST BUILT-IN TIMER
S133
DISPLAY DISABLED?
YES
NO
S134
NOTIFY RECEIPT OF MESSAGE AND DISPLAY ORIGINATING VEHICLE ID (REQUESTED VEHICLE ID)
S135
COUNT VALUE LARGER THAN PREDETERMINED VALUE?
YES
NO
S136
START COUNTING SECOND BUILT-IN TIMER
S137
ID STORED?
YES
NO
S138
VALID ID?
YES
NO
S139
DISPLAY REMOTE VEHICLE POSITION
S140
VALID ID?
YES
NO
S141
DISPLAY THAT ORIGINATING VEHICLE ID (REQUESTED VEHICLE ID) IS INVALID
S142
COUNT VALUE LARGER THAN PREDETERMINED VALUE?
YES
NO
RETURN

FIG.16

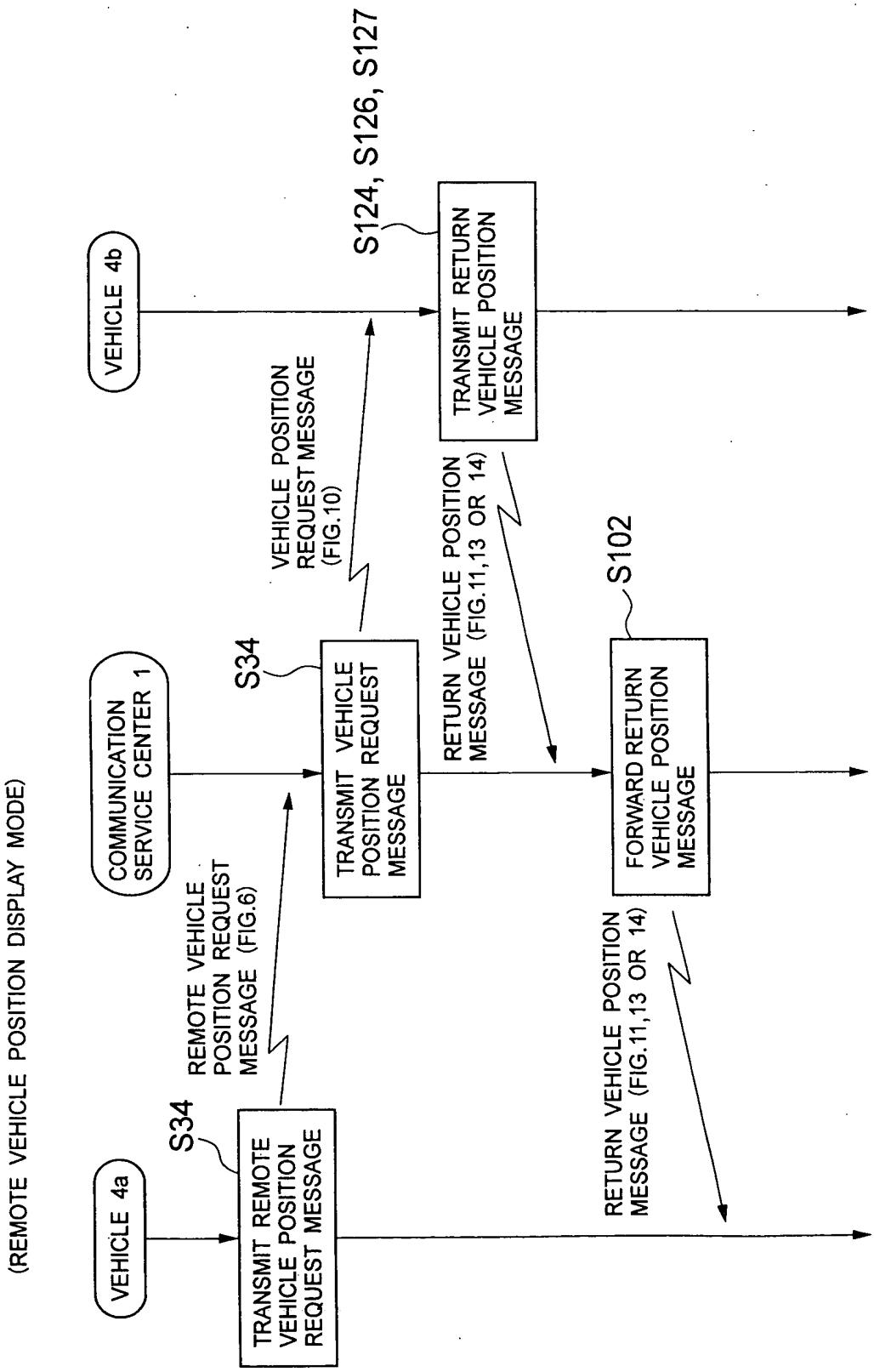
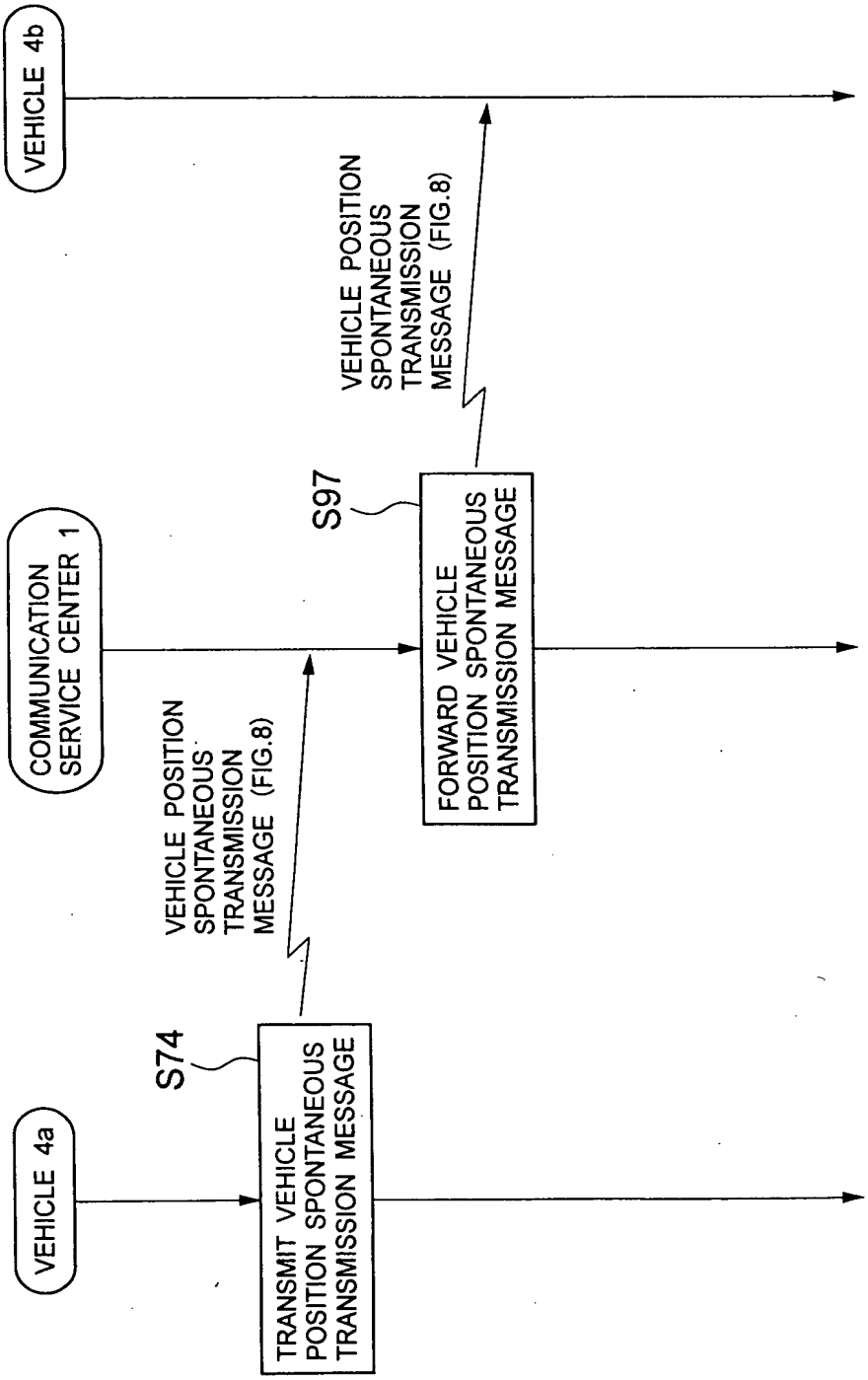

(REMOTE VEHICLE POSITION DISPLAY MODE)
VEHICLE 4a
VEHICLE 4b
COMMUNICATION SERVICE CENTER 1
TRANSMIT REMOTE VEHICLE POSITION REQUEST MESSAGE
S34
REMOTE VEHICLE POSITION REQUEST MESSAGE (FIG.6)
TRANSMIT VEHICLE POSITION REQUEST MESSAGE
S34
VEHICLE POSITION REQUEST MESSAGE (FIG.10)
TRANSMIT RETURN VEHICLE POSITION MESSAGE
S124, S126, S127
RETURN VEHICLE POSITION MESSAGE (FIG.11,13 OR 14)
FORWARD RETURN VEHICLE POSITION MESSAGE
S102
RETURN VEHICLE POSITION MESSAGE (FIG.11,13 OR 14)

FIG.17


VEHICLE 4a
VEHICLE 4b
COMMUNICATION SERVICE CENTER 1
TRANSMIT VEHICLE POSITION SPONTANEOUS TRANSMISSION MESSAGE
FORWARD VEHICLE POSITION SPONTANEOUS TRANSMISSION MESSAGE
S74
S97
VEHICLE POSITION SPONTANEOUS TRANSMISSION MESSAGE (FIG.8)
VEHICLE POSITION SPONTANEOUS TRANSMISSION MESSAGE (FIG.8)